

out clinical diabetes was present. Severe diabetes appeared six months later with great suddenness. Control of the diabetes required a daily dose of insulin from 250 to 500 units over a period of about one year. He was treated with irradiation to the pituitary, stilbestrol and later methyl testosterone. While receiving methyl testosterone a remission occurred so that glycosuria became minimal even without insulin treatment.

We have attempted to elucidate the mechanism of insulin resistance in this patient by biochemical and hormonal studies. During the phase of severe diabetes there was severe lipemia and hypercholesterolemia. Upon subsidence of the diabetes the blood fats and cholesterol almost returned to normal. An attempt was made to demonstrate a factor in the patient's serum inhibiting peripheral utilization of glucose. However, the patient's serum did not inhibit the uptake of glucose by the isolated rat diaphragm.

During the active period of diabetes there was an elevation in the excretion of urinary "cortin" as measured by the liberation of formaldehyde from steroid residues. Values obtained were 1.9, 3.5, 2.4, 4.8 mg. per day (normal, circa 0.75 to 2.0 mg.). Excretion of 17-ketosteroids was a high normal with values from 16 to 36 mg. per day. Following clinical remission cortin excretion fell to 0.81, 0.85, 1.1 mg. per day and the 17-ketosteroids were also reduced to 4.5, 4.7 and 5.4 mg. per day.

The insulin resistance here described is probably hormonal in type and can be partly explained by adrenal cortical hyperfunction. An additional direct pituitary diabetogenic factor was not demonstrated but is presumed also to have been active.

**EXPERIMENTAL EVIDENCE ON THE MECHANISM OF DIABETIC KETOSIS.** *Lawrence E. Hinkle, Jr., M.D., George A. Conger, M.D. and Stewart Wolf, M.D. New York, N. Y.* (From the New York Hospital and the Departments of Medicine and Psychiatry of Cornell University Medical College.)

In a study of twenty-five human subjects with diabetes mellitus approximately fifty instances of clinical ketosis were observed to occur in a setting of emotional conflict and in the absence of other pertinent factors including infection. Moreover, day to day observation of these subjects both in and out of the hospital yielded a

close correlation between life situations, emotion and the metabolic state as reflected by glycosuria, ketonuria, insulin requirement and the symptoms of diabetes.

In an experimental study of nine of the subjects quantitative measurements of blood ketone and glucose concentrations and concomitant determination of urine volume and glucose were made before, during and after an interview in which intense emotional conflict was engendered. Ages of the patients varied from fourteen to sixty years and insulin requirements from 0 to 100 units per day. The chemical determinations were made on either peripheral venous blood or on blood withdrawn directly from a catheter introduced into the hepatic vein. In all cases a significant elevation of blood ketones, as well as a marked increase in the urine volume and rate of urinary glucose excretion, occurred during the traumatic interview. In the most severe diabetics the rapidity and degree of the increase in blood ketones and urine sugar was greatest, but nevertheless a marked degree of ketosis was produced in one of the mildest diabetics when the traumatic conflict situation was prolonged. The level of the blood glucose also fluctuated significantly and was usually lower at the end than at the beginning of the experimental period.

Thus significant emotional conflict has been shown to be associated with a rise in the blood ketone level and a simultaneous "washing out" of glucose through diuresis. The evidence indicates that such a mechanism is commonly involved in the decompensation of diabetes and the production of clinical ketosis.

**EFFECT OF ADMINISTRATION OF POTASSIUM BASED ON STUDY OF THE HUMAN SUBJECT AND THE DOG.** *Samuel Bellet, M.D., William A. Steiger, M.D., P. C. Gazes, M.D. and Carl S. Nadler, M.D. Philadelphia, Pa.* (From the Divisions of Cardiology and Chemistry, Philadelphia General Hospital and the Robinette Foundation, University of Pennsylvania.)

Potassium is frequently administered to patients who have varying degrees of hypopotassemia. The problem of determining the maximum therapeutic and early toxic action is of considerable importance. Its chemical estimation, while highly desirable, is not always available initially or during the various phases